Table 3: Results of different studies about CED of lignite mining in West-Germany

| | CED [MJ/t _{Lign}] | prim. energy demand for extraction [%] |
|--------------------|--------------------------------|--|
| this study | 533.6 | 6.2 |
| GaBi 3.0 (Germany) | 459.6 | 4.9 |
| GEMIS 3.x | 281.8 | 3.3 |
| GEMIS 3.x a) | 310.6 | 3.5 |
| IfE TU-Muenchen | 357 b) | 4.18 |

^{a)} Source: German Electricity Association (VDEW) ^{b)} estimated with a net calorific value of 8540 MJ/t

6 Conclusion

Within an entire energy assessment of the utilisation of lignite as an energy carrier, the energy demanded for the supply of energy carriers must also be respected. Due to the predominantly West-German lignite mining in Germany (about 60%), the great CED of 533.6 MJ/t in Rhenish-area has to be considered.

Caused by different geological circumstances and frequently varying mining conditions, the results of this analysis cannot be transferred simply to other mines or operating years. It has to be checked whether boundary conditions, especially the relation between overburden and water to lignite or the supply of the mining equipment with electricity or fuel, allow a transfer of the determined values.

References

- VDI-Richtlinien (1997): Cumulative Energy Demand Terms, Definitions, Methods of Calculation. VDI – Guideline 4600, Beuth Verlag GmbH, Berlin
- [2] Röhrlich M, Koch H, Willmen T, Briem S, Alkan Z (1998): Kumulierter Energieaufwand bei der Bereitstellung fossiler Energieträger. Interner Bericht 98-7, Institut für Bergbaukunde I, Lehrstuhl für Reaktorsicherheit und -technik, RWTH Aachen, Germany
- [3] Briem S, Alkan Z, Dienhart M, Quinkertz R (1999): Energetisch und stoffliche Bilanzierung von Stromerzeugungsstrukturen Methodik und Ergebnisse des Energiemodells des Teilprojekts 'Energiebereitstellung', Interner Bericht 99-8, Lehrstuhl für Reaktorsicherheit und -technik, RWTH Aachen, Germany
- [4] Kleinert T, Briem S, Alkan Z, Dienhart M, Quinkertz R (1998): Spezifischer Kumulierter Energieaufwand zur Bereitstellung von Rohmaterialien, Interner Bericht 98-11, Lehrstuhl für Reaktorsicherheit und -technik, RWTH Aachen, Germany
- [5] Gränicher HP (1996): Gummi EPDM, in Ökoinventare für Energiesysteme, Schlußbericht des NEFF/BEW-geförderten Projektes 'Umweltbelastung der End- und Nutzenergiebereitstellung', Anhang A: Basismaterialien, ETH Zürich, Switzerland
- [6] ÖKO-Institut (1998): GEMIS 'Gesamt-Emissions-Modell integrierter Systeme', A Computer-Instrument for environmental- and costs analysis of energy-, transportation and material systems. Darmstadt, Germany
- [7] GaBi (<u>Ganzheitliche Bilanzierung</u>) (1998): A Software-Systeme for LCA. PE Product Engineering GmbH, Dettingen/Teck; Institut für Kunststoffkunde und -prüfung, Universität Stuttgart, Germany
- [8] Bronold H (1997): Ganzheitliche Analyse der Brennstoffbereitstellung am Beispiel von Braunkohle und Erdöl. Diplomarbeit, Institut für Energietechnik, TU München, Germany

Received: November 24th, 1999 Accepted: June 9th, 2000 Online-First: November 10th, 2000

Conference Announcement: Environmental Sustainability Conference *

Paper abstracts due: November 30, 2000 • Event dates and location: November 12-14, 2001, Graz, Austria

Event description: The theme for this conference is "The Future of Sustainability in the Mobility Industries". Focusing on the future of transportation, this premier forum brings together the environmental experts working in the aerospace, automotive, shipping and rail industries to share common solutions. The newest and latest developments in global climate change, design for the environment, life cycle analysis, environmental management systems (e.g. ISO14001, Responsible Care, etc.), materials, manufacturing techniques and pollution prevention will be featured. This meeting also provides the opportunity to discuss current and forthcoming policies, standards and regulations in the environmental arena. This conference will represent a road map for the needs of research, engineering development and tools to provide sustainable transportation well into the future.

Possible paper topics:

 Contribution of the Mobility Industry Toward Sustainable Development - Options for sustainable mobility, Options

- for the third world, Safeguards for individual mobility, Knowledge and Technology Gaps, Extension of life cycle models, Environmental decision making tools, Materials;
- Manufacturer Responsibilities in Product Design OEM expectations of suppliers, Supplier roles in product stewardship, Sustainable development, Regulatory drivers of product design, Industrial ecology, Reduction of Carbon Dioxide and Other Green House Gases, Status of the global climate change issues, Infrastructure, Zero emission vehicles and sustainable mobility, Emissions trading technical issues, Vehicle contribution to emissions;
- Extended Product Responsibility (EPR) Systems and processes needed for EPR, End of life vehicle management, Material recycling, Remanufacture

'Formerly the Total Life Cycle Conference

Submit abstracts to: Sandra Gadzia, SAE International, 400 Commonwealth Drive, Warrendale, PA 15096-0001, USA, FAX: 1 724 776 1830, EMail: gadzia@sae.org. Additional information will be available on the SAE website at www.sae.org.